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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>12 September 2003</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-21</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-21</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>12 September 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Drawings

1.   The drawings were received on 9/12/2003. These drawings are accepted.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2.   **Claim 18** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a.   **Claim 18** recites the limitation "a DOCSIS MAC ... for encrypting transmit packet data from the data network ...". It is unclear as to whether the applicant intends for the MAC to decrypt the data received from the host computer or encrypt the transmit packet data from the data network. Based on the contents of the recited limitations, the claim seems to be referring to demodulating transmitted signals, wherein decryption should occur on the transmitted packet data prior to demodulation. Is the applicant referring to demodulation, decryption of the transmitted data packets?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1-3** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Fielding et al (US Patent No.: 6097706) in view of Brooks et al (US Publication No.:

20010039600) in view of Alessi et al (Publication Title: "Adapting the DOCSIS

Protocols for Military Point to Multipoint Wireless Links").

a. **Claim 1**,

    i.   Fielding et al discloses

- "a satellite earth station operably coupled to at least one data network" (Fig. 1, labels 12,10, Col. 1, lines 51-54) and

- "a plurality of satellite modems" (Fig. 1, labels 11-14),

- "each satellite modem of the plurality of satellite modems communicating in an upstream and downstream data communication mode with the satellite earth station via at least one servicing satellite" (Fig. 1, labels 11-14 would have satellite modems and label 30 as the servicing satellite).

    ii.   Fielding et al fails to disclose the components of the satellite modem.

    iii.   Brooks et al discloses

- "a host processor for receiving data packets from the at least one data network and processing the Data Over Cable Service Interface Specification (DOCSIS) management packets" (Fig. 1, labels

126,128,130,132 as data network links. Fig. 1, labels 102,104,122,

paragraphs 37,38,40 any of which can be considered host processors

as defined in the limitations. Paragraph 24 discloses the cable modem

device 100 permits MAC functions to be programmed to support

evolving standards such as DOCSIS.),

- "a DOCSIS Media Access Control (MAC) coupled to the host processor

  for encrypting the transmit packet data from the host memory, framing

  data in MAC headers and inserting MAC timestamps in the transmit

  packet data" (Paragraph 24 discloses the cable modem device 100

  permits MAC functions to be programmed to support evolving

  standards such as DOCSIS. Fig. 2, label 224, paragraph 42 discloses

  the functionalities of the MAC.)

- "a satellite modulator coupled to the DOCSIS MAC for modulating the

  encrypted transmit packet data to generate downstream output data for

  transmission to at least one of the plurality of satellite modems" (Fig. 2,

  label 118 as the modulator coupled to the MAC, label 224, Fig. 1, label

  118 shows communication of the modulated output to cable media,

  wherein the cable media can be satellite communication as defined in

  paragraph 25.),

- "a burst demodulator for demodulating upstream data received from at

  least one of the plurality of satellite modems" (Fig. 2, label 114, Fig. 1,

  label 114 shows demodulating of the data from the cable media,

wherein the cable media can be satellite communication as defined in

paragraph 25.), and

- "a decoder coupled to the burst demodulator and the DOCSIS MAC for

  decoding the demodulated data from the burst demodulator and

  sending the decoded data to the DOCSIS MAC, wherein the DOCSIS

  MAC sends DOCSIS management packets portion of the decoded data

  to the host processor and sends transmit packet data portion of the

  decoded data to the at least one data network". (Fig. 2, label 220 as the

  decoder, label 114 as the demodulator, label 224 as the MAC, Fig. 2,

  label 224 shows the CMAC sending upstream data to the modulator

  and out to the cable media as shown in Fig. 1. Fig. 2 also shows label

  224 sending data to the APB, which sends data to the ASB and host

  processors, labels 102,104,122)

- It would have been obvious to one skilled in the art to use the satellite

  modem as disclosed by Brooks et al in the satellite earth stations for

  communication within the overall system as shown by Fielding et al so

  to provide information to transmit and decode the received information

  within the satellite system.

iv. Fielding et al and Brooks et al fails to discloses a turbo decoder. Alessi et

al discloses such a limitation. (page 83 section Error correction of DOCSIS

Application to SGLIU.) It would have been obvious to one skilled in the art

to use a turbo decoder in a DOCSIS application to satellite communication

as disclosed by Alessi et al into Brooks et al so to provide high BER

environments.

b. **Claim 2**, Brooks et al discloses "the data network is the Ethernet". (paragraph

25)

c. **Claim 3**, Alessi et al discloses "an RS Decoder for correcting errors of the

decoded signal from the turbo decoder". (page 83, section Error Correction for

DOCSIS Application to SGLIU discloses RS Viterbi codes are used wherein an

RS decoder would be part of the turbo decoder.)

4. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fielding et

al in view of Brooks et al, further in view of Alessi et al as applied to claim 1 and

further in view of Quigley et al (US Patent No.: 6650624).

a. **Claim 4**,

   i.   Fielding et al, Brooks et al and Alessi et al fails to disclose the limitations of

        claim 4.

   ii. Quiley et al discloses

        • "the DOCSIS MAC comprises: a SPI controller for supporting a

          downstream channel and at least one upstream channel" (Fig. 7a, label

          spi);

        • "an encryption engine for encrypting the downstream data" (Fig. 7b,

          label upstream encryptor);

- "a decryption engine for decrypting the upstream data" (Fig. 7b, label downstream decryptor);

- "a formatter for formatting downstream data into Motion Picture Expert Group (MPEG) frames" (Fig. 6c, label downstream processor); and

- "a timing generator for inserting DOCSIS time stamps at programmable intervals" (Fig. 6c, label downstream processor). It would have been obvious to one skilled in the art at the time of the invention to use the DOCSIS Mac as disclosed by Quiley et al in Fielding et al in view of Brooks et al in view of Alessi et al's invention so to effectively process incoming and outgoing information.

5. **Claims 5,10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fielding et al in view of Brooks et al, further in view of Alessi et al as applied to claim 1 and further in view of Schmidl et al (US Publication No.: 20030206561).

  a. **Claim 5,**

    i. Fielding et al, Brooks et al and Alessi et al fails to disclose the components within the burst demodulator.

    ii. Schmidl et al discloses "an analog front end (AFE) circuit for accepting an analog input signal and generating a digital signal" (Fig. 10, label a/d)

- "a digital filter coupled to the AFE circuit for filtering the digital signal" (Fig. 10, label filter);

- "a quadrature amplitude (QAM) demodulator coupled to the digital filter for word detection of programmable length and pattern in a burst preamble of the digital signal" (Fig. 10, label demodulation, paragraph 143)

- "an adaptive equalizer coupled to the QAM demodulator for characterizing a RF channel response" (Fig. 10, label demodulation, paragraph 143); and

- "a decoder coupled to the adaptive equalizer" (Fig. 10, label decoder)

iii. Schmidl et al fails to disclose a "forward error correction (FEC) decoder". Alessi et al discloses such a limitation. (page 83, section error correction for DOCSIS application to SGLIU discloses FEC RS Viterbi codes and section variable FEC) It would have been obvious to one skilled in the art to incorporate the burst demodulator components as disclosed by Schmidl et al into Fielding et al in view of Brooks et al in view of Alessi et al's invention to properly receive and decode information.

b. **Claim 10,**

i. Fielding et al, Brooks et al, and Alessi et al fails to disclose the limitations of claim 10.

ii. Schmidl et al discloses "dual analog-to-digital converters (ADCs) for sampling a baseband IQ analog waveform" (Fig. 10, label a/d)

- "phase/frequency recovery circuit coupled to the dual ADCs for
   recovering the phase and frequency of the sampled waveform"; (Fig.
   10, label symbol timing acquisition)

- "a variable demodulator for demodulating the recovered signal" (Fig. 10,
   label demodulation)

- "a turbo decoding circuit coupled to the demodulator for turbo decoding
   of the modulated signal" (Fig. 10, label decoder)."

iii. Schmidl et al fails to disclose "a forward error correction (FEC) decoder
coupled to the demodulator for FEC decoding of the modulated signal".

iv. Alessi et al discloses such a limitation. (page 83, section error correction for
DOCSIS application to SGLIU discloses FEC RS Viterbi codes and section
variable FEC) It would have been obvious to one skilled in the art to
incorporate the burst demodulator components as disclosed by Schmidl et
al into Fielding et al in view of Brooks et al in view of Alessi et al's invention
to properly receive and decode information.

6. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fielding et
al in view of Brooks et al, further in view of Alessi et al and further in view of Schmidl
et al as applied to claim 5, further in view of Azenkot et al (US Patent No.:
7050419).

a. **Claim 6**, Fielding et al, Brooks, et al and Alessi et al fails to disclose "the FEC
decoder comprises a programmable de-scrambler; a programmable reed-

Solomon (RS) decoder; a byte deinterleaver; and FEC interface circuit".

Azenkot et al discloses such limitations. (Fig. 6, labels 244,246,128,248) It

would have been obvious to one skilled in the art at the time of the invention to

use an FEC decoder as disclosed by Azenkot et al into Fielding et al in view of

Brooks et al in view of Alessi et al's invention so to provide an efficient FEC

decoder.

7. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fielding et

al in view of Brooks et al, further in view of Alessi et al and further in view of Schmidl

et al as applied to claim 5, further in view of Geile (US Patent No.: 7310522).

   a. **Claim 7**,

      i.   Fielding et al, Brooks et al and Alessi et al fails to disclose the limitations of

          claim 7.

      ii.   Geile discloses "the adaptive equalizer includes an Ingress cancellation

          circuit for canceling ingress noise and removing inter-symbol interference".

          (Fig. 26, label 112) It would have been obvious to one skilled in the art to

          use an Ingress filter as disclosed by in Fielding et al in view of Brooks et al

          in view of Alessi et al's invention so to eliminate ingress noise.

8. **Claims 8,9** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Fielding et al in view of Brooks et al, further in view of Alessi et al and further in view

of Schmidl et al as applied to claim 5, further in view of Quiley et al (US Patent No.:

6650624).

    a. **Claim 8**, Fielding et al, Brooks et al, Alessi et al and Schmidl et al fails to

        disclose the limitation of claim 8. Quiley et al discloses "a microcontroller for

        programming of the burst demodulator" (Fig. 9, label 520). It would have been

        obvious to one skilled in the art to adjust the burst demodulator as disclosed by

        Quiley et al in Fielding et al in view of Brooks et al in view of Alessi et al in view

        of Schmidl et al's invention to increase robustness.

    b. **Claim 9**, Fielding et al, Brooks et al, Alessi et al and Schmidl et al fails to

        disclose the limitation of claim 9. Quiley et al discloses "a channel B input

        interface configured to accept a direct RF analog input" (Fig. 5b, label RF

        tuner).

9. **Claims 11-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over

    Fielding et al in view of Brooks et al, further in view of Alessi et al and further in view

    of Schmidl et al as applied to claim 10, further in view of Kim (Publication Title:

    "Turbo-coded OFDM System for a Mobile Satellite Broadcasting System").

    a. **Claim 11**, Fielding et al, Brooks et al and Alessi et al fails to disclose the

        limitations of claim 11. Kim discloses "the turbo decoding circuit comprises: a

        Viterbi decoder, a synchronization and deinterleaver, and a reed-Solomon (RS)

        decoder." (Fig. 1b, label decoder 1, decoder 2, synchronization and

        deinterleaver) It would have been obvious to one skilled in the art at the time of

the invention to incorporate the components as disclosed by Kim into Fielding et al in view of Brooks et al in view of Alessi et al's invention so to provide appropriate turbo decoding.

b. **Claim 12**, Schmidl et al discloses "a microcontroller for system configuration, control, and monitoring functions". (Fig. 19a)

c. **Claim 13**, Brooks et al discloses "a downstream circuit coupled to the DOCSIS MAC for reformatting the data into a byte-wide stream and forwarding the bytes to the satellite modulator." (Fig. 2, labels 224 and 118)

10. **Claims 18-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brooks et al (US Publication No.: 20010039600) in view of Alessi et al (Publication Title: "Adapting the DOCSIS Protocols for Military Point to Multipoint Wireless Links").

a. **Claim 18**,

   i.   Brooks et al discloses

   • "a host computer coupled to a data network for receiving data packets from a data network and processing the Data Over Cable Service Interface Specification (DOCSIS) management packets" (Fig. 2, label ASB, paragraph 36)

   • "a demodulator/Media Access Control (MAC) card coupled to the host processor" (Fig. 2, label 114 as the demodulator, label 224 as the MAC) "including a DOCSIS MAC coupled to the host computer" (Fig. 2, label

abs and paragraph 36) "for encrypting transmit packet data from the

data network responsive to the processed DOCSIS management

packets from the host computer" (paragraph 42),

- "a burst demodulator for demodulating upstream data received from a

  satellite modem" (Fig. 2, label 114), and

- "a decoder coupled to the burst demodulator and the DOCSIS MAC for

  decoding the demodulated data from the burst demodulator and

  sending the decoded data to the DOCSIS MAC, wherein the DOCSIS

  MAC sends DOCSIS management packets portion of the decoded data

  to the host computer and sends transmit packet data portion of the

  decoded data to the data network"; (Fig. 2, label 220 as the decoder,

  label 114 as the demodulator, label 224 as the MAC, Fig. 2, label 224

  shows the CMAC sending upstream data to the modulator and out to

  the cable media as shown in Fig. 1. Fig. 2 also shows label 224

  sending data to the APB, which sends data to the ASB and host

  processors, labels 102,104,122) and

- "a satellite modulator coupled to the demodulator/MAC card for

  modulating the encrypted transmit packet data from the DOCSIS MAC

  to generate downstream output data for transmission to the satellite

  modem". (Fig. 2, label 118, paragraphs 25 and 42)

ii. Brooks et al fails to disclose "a turbo decoder".

iii.   Alessi et al discloses such a limitation. (page 83 section Error correction of

DOCSIS Application to SGLIU.) It would have been obvious to one skilled

in the art to use a turbo decoder in a DOCSIS application to satellite

communication as disclosed by Alessi et al into Brooks et al so to provide

high BER environments.

b.   **Claim 19**, Brooks et al discloses "the demodulator/MAC card is embodied in a

pluggable circuit board card resident in a PCI chassis and the host computer is

a personal computer (PC). (paragraph 36)

c.   **Claim 20**, Brooks et al discloses "the data network is the Ethernet" (paragraph

44).

d.   **Claim 21**, Brooks et al discloses "the DOCSIS MAC and the PC communicate

via a PCI bus". (paragraph 36)

11. **Claims 14-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Quiley et al (US Patent No.: 6650624) in view of Alessi et al (Publication Title:

"Adapting the DOCSIS Protocols for Military Point to Multipoint Wireless Links").

a.   **Claim 14,**

i.   Quiley et al discloses

● "receiving a radio frequency (RF) upstream signal" (Fig. 9, label RF)

● "demodulating the received RF signal to generate soft decision

quadraphase-shift keying (QPSK) output signal" (Fig. 9, label 448, Col.

9, lines 18-21)

- "decoding the output signal by a Reed-Solomon (RS) decoder" (Fig. 9, label decoder);

- "assembling DOCSIS packets in the RS decoded signal" (Fig. 9, label 60, Fig. 7a shows a docsis and message processor); and

- "forwarding the assembled data to a data network" (Fig. 7a, label transmitter)

ii. Quiley et al fails to disclose "turbo decoding the output signal". Alessi discloses using a turbo decoder with RS decoding. (page 83, section Error correction of DOCSIS Application to SGLIU.) It would have been obvious to one skilled in the art to use a turbo decoder in a DOCSIS application to satellite communication as disclosed by Alessi et al into Quiley et al so to provide high BER environments.

b. **Claim 15,**

i. Quiley et al discloses

- "receiving DOCSIS-compliant data encoded with a Reed-Solomon encoding scheme from the data network" (Fig. 5b, label 263),

- "encoding the DOCSIS-compliant data" (Fig. 7b, label upstream encryptor);

- "generating baseband-frequency in-phase and quadrature-phase components of the encoded DOCSIS-compliant data" (Fig. 10, labels 538,540,462)

- "converting the encoded DOCSIS-compliant data to one or more analog

  signals for downstream satellite data transmission" (Fig. 21, label from

  upstream channel, 1150 and label to Mac, , Fig. 5b, output from label

  272)

  ii. Quiley et al fails to disclose turbo encoding. Alessi discloses using a turbo

  decoder with RS decoding. (page 83, section Error correction of DOCSIS

  Application to SGLIU.) It would have been obvious to one skilled in the art

  to use a turbo decoder in a DOCSIS application to satellite communication

  as disclosed by Alessi et al into Quiley et al so to provide high BER

  environments.

c. **Claim 16**, Quiley et al discloses "interpolating the baseband-frequency in-phase

   and quadrature-phase components to a common sample rate that is higher than

   a plurality of DOCSIS-compliant bandwidth sample rates". (Fig. 82, label 351,

   Col. 74, lines 37-38)

d. **Claim 17**,

   i. Quiley et al discloses

   - "digitally pre-compensating the common sample rate baseband-

     frequency in-phase and quadrature-phase components for impairments

     encountered in one or more subsequent processes" (Fig. 87);

   - "converting digitally pre-compensated common sample rate baseband-

     frequency in-phase and quadrature-phase components to one or more

     analog signals" (Fig. 61, label analog front end)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Linda Wong
12/21/2007

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